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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,539	Applicant(s) KOMMA ET AL.	
	Examiner LIXI CHOW	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19-28 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10, 12-17, 19-26, 28 and 30-32 is/are rejected.
- 7) ☒ Claim(s) 1, 11 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objection

1. Claims 1, 11 and 27 are objected to because of the following informalities:

In claim 1, it is suggested that the word “third” in line 23 should be --second-- as to avoid claim being indefinite.

For the purpose of this office action, the word “third” has been interpreted to be --second--.

In claim 11, the word “the” before “current” should be --a-- in line 5.

In claim 27, the word “the” before “current” should be --a-- in line 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 30 recites “a program of causing a computer to function as said control means of the optical pickup driving apparatus according to claim 1”. However, claim 1 is directed toward an apparatus claim, not a method claim. Therefore, it is not clear as to what the “program” is doing since it depends from an apparatus claim.

Please note that in order resolve the above issue, it is suggested that claim 30 recites “A computer readable recording medium carrying a program of causing a computer to perform the

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moving step and control step according to claim 17", given that the specification has antecedent basis for the phrase "computer readable recording medium".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-8, 14-17, 19-24, 30, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (US 2004/0105358; hereafter Watanabe) in view of Manoh et al. (WO 03/010761; please refer to US 7,333,412; hereafter Manoh).

Regarding claim 1:

Watanabe discloses an optical pickup driving apparatus (see Fig. 3) for focusing an optical spot on a single-layer recording surface or a plurality of multi-layered recording surfaces of an optical information recording medium, comprising:

moving means of moving an objective lens for focusing said optical spot on said recording surface of said optical information recording medium in a direction of the optical axis of said optical spot (see Fig. 9; the lens is moving toward the recording surface); and

control means of controlling said moving means based on a voltage of a focus error signal based on reflected light from said optical spot (see Fig. 3, element 20 and par. [0061])

wherein said control means controls said moving means so that said moving means moves said objective lens toward said recording surface, and when said control means detects that the voltage of said focus error signal has reached a first level voltage corresponding to

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displacement of predetermined magnitude from a reference potential (see Fig. 9, the control means is capable of detecting that the focus error signal has reached the point P level; reference potential corresponds to when the focus error signal is zero), said moving means moves said objective lens toward said recording surface by a maximum of an upper limit of a predetermined amount of movement (see Fig. 9; the lens is being moved to a position that corresponds to point M of the FE signal), and when the amount of movement of said objective lens has reached said predetermined amount of movement, said moving means moves said objective lens away from said recording surface (see Fig. 9 and par. [0118]), and

when said control means newly detects that the voltage of said focus error signal has reached a second (i.e., the claimed third) level voltage corresponding to displacement of predetermined magnitude from said reference potential before the amount of movement of said objective lens reaches said predetermined amount of movement, said control means controls beam spot positioning so as to focus the optical spot (see par. [0127]; when jump operation is performed from layer L2 to layer L1, the focus error signal has reached a second level (i.e., the level represented by F in Fig. 9); it is inherent that after the jump operation, the control means is to perform the focus control).

Watanabe fails to mention using a first and second slice level voltage to monitor focus error signal. However, it is clear that Watanabe does teach monitoring the amplitude of the focus error signal to determine its peaks and domain.

On the other hand, Manoh discloses an optical pickup driving apparatus comprising a control means (see Fig. 4, element 50) for detecting when the voltage of focus error signal

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reaches a first slice level voltage or a second slice level voltage (see Fig. 11B; plurality of slice levels are set to monitor the FE signal).

Watanabe may already use a first and second slice level voltage to monitor the focus error signal; however, it is not clearly shown in the reference. Therefore, the office action has provided Manoh to show that it is well known in the art to adopt a plurality of slice level voltages to monitor the focus error signal. One of ordinary skill would have been motivated to use plurality of slice level voltages to monitor the focus error signal because information regarding whether the focus error signal has exceeded the respective slice level voltage can be used to initiate subsequent operations.

Regarding claim 3:

Watanabe discloses the optical pickup driving apparatus according to claim 1, wherein the voltage of said focus error signal alters in positive and negative directions with respect to said reference potential according to the movement of said objective lens (see Watanabe Fig. 9), and

said control means detects either a voltage higher or lower than said reference potential as said first level voltage (see Fig. 9; the level represented by point B is the first level).

Regarding claim 4:

Watanabe discloses the optical pickup driving apparatus, wherein said control means uses the voltage higher or lower than said reference potential as said first level voltage, whichever is detected first (see Fig. 9; the level represented by point B is the first level).

Regarding claim 5:

Watanabe discloses the optical pickup driving apparatus according to claim 1, wherein the voltage of said focus error signal fluctuates in positive and negative directions with respect to

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said reference potential according to the movement of said objective lens (see Watanabe Fig. 9),
and

said control means detects both a voltage higher and lower than said reference potential as said first level voltage (see Fig. 9; the level represented by point B and D is the first level).

Regarding claim 6:

Watanabe discloses the optical pickup driving apparatus according to claim 31, wherein said control means detects either a voltage higher or lower than said reference potential as said second level voltage or said third level voltage (see Fig. 9; the level represented by point F is the second level).

Regarding claim 7:

Watanabe discloses the optical pickup driving apparatus according to claim 6, wherein said control means uses the voltage higher or lower than said reference potential as said second level voltage or said third level voltage, whichever is detected first (see Fig. 9; the level represented by point F is the second level).

Regarding claim 8:

Watanabe discloses the optical pickup driving apparatus according to claim 31, wherein the magnitudes of displacement of said first level voltage, said second level voltage and said third level voltage from said reference potential are substantially the same (see Fig. 9; the level represented by point B, F and N corresponds to first, second and third level, which are displaced from the zero reference point in the similar manner).

Regarding claim 14:

Watanabe discloses an optical information reproducing apparatus provided with means of reading information recorded in an optical information recording medium, said reading means using the optical pickup driving apparatus according to claim 1 (see Fig. 3).

Regarding claim 15:

Watanabe discloses an optical information recording apparatus provided with recording means of recording information in an optical information recording medium, said recording means using the optical pickup driving apparatus according to claim 1 (see Fig 3, and par. [0050]).

Regarding claim 16:

Watanabe discloses an optical information recording/reproducing apparatus provided with recording/reproducing means of recording and/or reproducing information in/from an optical information recording medium, said recording/reproducing means using the optical pickup driving apparatus according to claim 1 (see Fig. 3 and par. [0050]).

Regarding claims 17, 19-24:

Claims 17 and 19-24 recite similar limitations as in claims 1 and 3-8, respectively. Therefore, claims 17 and 19-24 are rejected under the same reasons set forth in claims 1 and 3-8, respectively.

Regarding claim 30:

Watanabe discloses a tangible computer readable recording medium carrying a program of causing a computer to function as said control means of the optical pickup driving apparatus according to claim 1 (see Fig. 3; a program is stored in the DSP 162 to cause a computer to function as said control means).

Regarding claim 31:

Watanabe discloses the optical pickup driving apparatus according to claim 1, wherein when said control means detects that said objective lens has reached a third (i.e., the claimed second) level voltage corresponding to displacement of predetermined magnitude from the reference potential for the period of said backward movement, said control means controls beam spot positioning so as to focus the optical spot (see Fig. 9, the level represented by N is the third level voltage).

Regarding claim 32:

Claim 32 recites similar limitation as in claim 31; hence, claim 32 is rejected under the same reason set forth in claim 31.

6. Claims 9, 10, 12, 25, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Manoh as applied in claim 31 and 32 above, and further in view of Kobayashi (US 7,145,842).

Regarding claims 9 and 10:

The combination of Watanabe and Manoh fails to disclose subject matter in claims 9 and 10; however, Kobayashi discloses that there is a difference in reflectivity between adjacent layers (see Fig. 6B; the first layer has a large reflectivity whereas the second layer has a small reflectivity).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Watanabe to arrange the first, second and third slice level voltages such that the magnitude of displacement of said first slice level voltage from said reference potential is greater than the magnitude of displacement of said second slice level

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voltage and said third slice level voltage from said reference potential, and wherein the magnitudes of displacement of said second slice level voltage and said third slice level voltage from said reference potential are substantially the same. One of ordinary skill in the art would have been motivated to do this because light can be accurately focused on the second layer where the reflectivity is small.

Regarding claim 12:

The combination of Watanabe and Manoh does not disclose a fourth slice level voltage at which the displacement from said reference potential is greater than the displacement of said first slice level voltage from said reference potential. However, Kobayashi discloses that there is a difference in reflectivity between adjacent layers (see Fig. 6B; the first layer has a larger reflectivity whereas the second layer has a small reflectivity).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Watanabe to arrange the fourth slice level voltage greater than the first slice level voltage from the reference potential, since it has been demonstrated by Kobayashi that each layer on the recording medium has a different reflectivity. In order to accurately focus light onto the recording layer, the appropriate slice level voltage has to be set.

Regarding claims 25, 26 and 28:

Claims 25, 26 and 28 recite similar limitations as in claims 9, 10 and 12. Therefore, claims 25, 26 and 28 are rejected under the same reasons set forth in claims 9, 10 and 12.

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7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Manoh as applied in claim 1 above, and further in view of Kitani et al. (US 2003/0151991; hereafter Kitani).

Regarding claim 13:

The combination of Watanabe and Manoh discloses all the features in claim 1; however, the combination fails to mention whether the control means is formed on an integrated circuit.

On the other hand, Kitani discloses an optical pickup driving apparatus, comprising a control means that is formed on an integrated circuit (see Fig. 5; servo control unit corresponds to a control means, which is formed on an integrated circuit 20, see par. [0052]). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to form a control means on an integrated circuit as suggested by Kitani. One of ordinary skill in the art would have been motivated to do this because the performance of integrated circuit is high, and the small size of the circuit allows short traces which allow low power consumption.

Allowable Subject Matter

8. Claims 11 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regards to claim 11, none of the reference of record alone or in combination discloses or suggests the optical pickup driving apparatus according to claim 1, wherein said optical information recording medium has a plurality of multi-layered recording surfaces, and **said predetermined amount of movement is given by a moving distance L from a current position of said optical pickup when said first slice level voltage is reached and said moving**

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distance L is defined by: (Formula 1) $L = d/n*(1+c)$ where d is a maximum value of the distance between said recording layers of said optical information recording medium, n is a refractive index of said optical information recording medium, and c is a sensitivity difference.

Claim 27 recites similar limitations; hence, claim 27 is objected in the similar manner.

Response to Arguments

9. Applicant's arguments with respect to claims 1 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIXI CHOW whose telephone number is (571)272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lixi Chow/

Examiner, Art Unit 2627